

COOKING RACK WITH REVOLVING APPARATUS

CROSS-REFERENCE TO RELATED APPLICATIONS

Not applicable.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

5 Not applicable.

REFERENCE TO A MICROFICHE APPENDIX

Not applicable.

BACKGROUND OF THE INVENTION

Field of the Invention

10 The invention relates to cooking racks and, more particularly, to cooking racks having apparatus for facilitating handling, viewing and more even cooking of food products.

Background Art

Various types of cooking racks are well known in the industry. For example, steel wire oven racks are often manufactured from a steel rod which is drawn, so as to form steel wire.

15 These oven racks formed of steel wire products can be coated with various types of materials. Also, oven racks and other oven-related articles can be manufactured from products other than steel. Of course, any type of oven rack or similar product which is positioned within an oven cavity during use must be capable of withstanding normal cooking temperatures. In addition, for ovens which employ self-cleaning cycles, the oven racks and other oven-related articles located

20 within the oven itself must be capable of being subjected to and withstanding temperatures which substantially exceed normal cooking temperatures. For example, steel wire oven racks may be subjected to temperatures above 900° F associated with self cleaning cycles, common in today's kitchen ovens.

Several difficulties have existed over the years in the oven and other cooking industries relating to such matters as handling of cooking racks and associated food products during and immediately following cooking operations, viewing of food products during cooking and relatively more "even" cooking of food products. These issues have been approached with various types of apparatus. For example, many of today's ovens include windows or other viewing apparatus in the oven doors and the like. Also, a substantial amount of work has been done in developing means for positioning and repositioning of oven racks within oven cavities. For example, oven racks often "slide" on brackets positioned on lateral sides of the oven cavity. Notwithstanding the foregoing, difficulties can still exist with respect to handling of food products during and immediately following the cooking process. The oven racks themselves tend to be extremely hot and difficult to manually manipulate. This also causes problems with respect to viewing. Still further, with the typical "stationary" position of oven racks throughout the entirety of a cooking process, it is sometimes difficult to achieve an "even" cooking of food products within typical oven cavities. This is true not only with respect to oven cavities, but also with respect to other cooking devices, such as outdoor grills, store-top cooking burners, commercial ovens, household ranges and the like.

SUMMARY OF THE INVENTION

In accordance with the invention, a cooking rack is adapted for use in cooking of various food products by placing the products on the rack. The cooking rack includes a main oven rack constructed of materials capable of being subjected to relatively high temperatures. The main oven rack has a cutout portion extending perpendicularly through a plane of the main oven rack. A frame wire surrounds the periphery of the cutout portion. A revolving apparatus is included which has an outer peripheral frame. The revolving apparatus includes support means

for supporting the food products on the revolving apparatus. Pivot means are pivotably coupled to the main oven rack and connected to the revolving apparatus. The pivot means permits the revolving apparatus to rotate or otherwise revolve relative to the main oven rack.

In accordance with other aspects of the invention, the cooking rack can comprise means for supporting the rack on a lower surface. In this situation, a plane of the lower surface is substantially parallel to the plane of the cooking rack. In accordance with yet another aspect of the invention, the cooking rack can include a plurality of cutout portions. A plurality of the revolving apparatus can be positioned within the cutout portions.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

The invention will now be described with reference to the drawings, in which:
FIG. 1 is a perspective view of a revolving rack apparatus in accordance with the invention;

FIG. 2 is a plan view of the rack apparatus depicted in FIG. 1;

FIG. 3 is a side elevation view of the rack apparatus in accordance with the invention, as depicted in FIG. 1;

FIG. 4 is a front elevation view of the rack apparatus depicted in FIG. 1;

FIG. 5 is a side sectional view of the rack apparatus depicted in FIG. 1, taken along section lines 5-5 of FIG. 4;

FIG. 6 is a plan view of a second embodiment of a revolving rack apparatus in accordance with the invention;

FIG. 7 is a front elevation view of the rack apparatus depicted in FIG. 6;

FIG. 8 is a side elevation view of the rack apparatus depicted in FIG. 6;

FIG. 9 is a perspective view of a third embodiment of a revolving rack apparatus in accordance with the invention, employing two revolving devices; and

FIG. 10 is a plan view of the rack apparatus depicted in FIG. 9.

DETAILED DESCRIPTION OF THE INVENTION

5 The principles of the invention are disclosed, by way of example, in three embodiments of revolving rack apparatus in accordance with the invention, as described herein and illustrated in FIGS. 1 – 10. The primary concept of the invention relates to the use of revolving devices which facilitate activities associated with the cooking of food products. These revolving devices can be circular in nature and can be manually turned by a user or automatically
10 rotated through the use of a motor or similar apparatus, so as to automatically rotate one or more revolution racks. In this regard, the use of traditional oven racks requires a user to handle food products in order to move them about an oven cavity, for purposes of facilitating viewing or more even cooking. The racks with revolving apparatus in accordance with the invention eliminate the need for the user to handle the food products. In this regard, the rack with the
15 revolving apparatus facilitates handling, viewing and more even cooking of food products. Although primarily described with respect to an rack which would typically be utilized in devices associated with ovens and the like, oven racks with revolving apparatus in accordance with the invention may be utilized with traditional household ranges, commercial ovens, barbeque grills and similar devices.

20 More specifically, and first primarily with respect to FIGS. 1 – 5, a rack with revolving apparatus 100 is illustrated in accordance with the invention. The rack with revolving apparatus 100 includes a traditional oven rack 102 having somewhat of a cutout portion 104. The main oven rack 102 may be constructed of metal wire or the like. The main oven rack 102

includes a front edge 106, left-side edge 108, rear edge 110 and right-side edge 112. For production purposes, the edges 106, 108, 110 and 112 may be formed of a continuous frame wire 114.

For purposes of support and rigidity, a series of wire rails 116 extend between the front edge 106 and the rear edge 110 of the main oven rack 102. These wire rails extend on each side of the cutout portion 104. As primarily illustrated in FIGS. 1 and 2, the wire rails 116 may be welded or otherwise connected to the top portion of the front edge 106 and the rear portion of the rear edge 110. In this regard, it should be noted that through the nubs 118 located at the rear portions of the left-side edge 108 and right-side edge 112, the rear edge 110 is slightly raised relative to the front edge 106. In this manner, the wire rails 116 can form a "level" surface.

Surrounding the cutout portion 104, which is circular in nature, is a circular frame wire 120. The circular frame wire 120 may be continuous in nature and form a circular perimeter for the cutout portion 104. A series of intermediate wire rails 122 extend from the front edge 106 to differing segment locations along the circular frame wire 120. The intermediate wire rails 122 are welded or otherwise connected at the top portions of the front edge 106 and continuous frame wire 114. In addition, other intermediate wire rails 122 extend from the rear edge 120 to differing segment locations along the back half of the circular frame wire 120. These intermediate wire rails 122 are connected at the top portion of the circular frame wire 120 and the bottom portion of the rear edge 110.

Still further, the main oven rack 102 includes a pair of lower support rails 124 which are spaced apart in a parallel relationship, and extend through the cutout portion 104 from the front edge 106 to the rear edge 110. As primarily illustrated in FIGS. 1, 2 and 4, the

intermediate wire rails 122 are welded or otherwise connected to the lower portion of the front edge 106 and the lower portion of the rear edge 110.

In accordance with the invention, the rack with revolving apparatus 100 includes a revolving apparatus 130, again illustrated in FIGS. 1 – 5. The revolving apparatus 130 includes an outer and circular perimeter frame 132 primarily shown in FIGS. 1 and 2. The circular perimeter frame 132 has a circumference slightly smaller than the circumference formed by the circular frame wire 120. Extending across segments of the circular perimeter frame 132 are a series of revolving apparatus wires 134. As primarily shown in FIGS. 1 and 2, the revolving apparatus wires 134 are parallel, with each wire 134 spaced equidistant adjacent wires 134. The revolving apparatus wires 134 provide support for food items, and are welded or otherwise connected to the top portions of the circular perimeter frame 132. Still further, the revolving apparatus 130 includes an H-shaped pivot bracket 136, again as primarily shown in FIGS. 1 and 2. The H-shaped pivot bracket 136 includes a pair of U-shaped brackets 138. Legs 140 of each of the U-shaped brackets 138 are connected to four of the revolving apparatus wires 134 at the lower portions thereof. The connection to the revolving apparatus wires 134 may be by weldment or otherwise. At the central portion of the H-shaped pivot bracket 136 is a pivot pin 142. The pivot pin 142 is rotatably connected to a base H-shaped bracket 144. The base H-shaped bracket 144 includes legs 146 which are welded or otherwise connected at their upper portions to each of the lower support rails 124. This is primarily shown in FIGS. 1 and 2. The H-shaped pivot bracket 136 can be rotatably connected through the pivot pin 142 to the base H-shaped bracket 144 through various conventional means, such as the use of bushing and bearing assemblies, sleeve assemblies and the like. Although not expressly shown in detail in the drawings, these assemblies may be conventional in nature.

With the rack with revolving apparatus 100 having the forgoing structure, the revolving apparatus 130, having support for food items on the revolving apparatus wires 134, is free to appropriately rotate or otherwise revolve relative to the main oven rack 102, through the pivot pin 142. In this manner, the user may readily manipulate and view food products, without necessitating actual touching of the food products themselves during and immediately after cooking. In addition, for purposes of relatively greater "even" cooking of food products, rotation during the cooking process can be used through rotation of the revolving apparatus 130 relative to the main oven rack 102.

A second embodiment of a rack with revolving apparatus 200 in accordance with the invention is illustrated in FIGS. 6, 7 and 8. Therein, the rack with revolving apparatus 200 includes a main oven rack 202 having a cutout portion 204. The main rack 202 includes a front edge 206, left-side edge 208, rear edge 210 and right-side edge 212. Because a substantial amount of the structure of the rack 200 in accordance with the invention is similar to the rack 100 in accordance with the invention, substantial detail is not required for description of the rack 200. The edges 206, 208, 210 and 212 can be formed from a continuous frame wire 214. The rack 200 also includes a circular frame wire 220. The circular frame wire 220 forms the perimeter of the cutout portion 204. Intermediate wire rails 222 extend from the front edge 206 to segment portions of the circular frame wire 220, and are welded or otherwise connected thereto. Correspondingly, further intermediate wire rails 222 are welded or otherwise connected from the rear edge 210 to segment portions in the back half of the circular frame wire 220.

Still further, the rack 200 includes lower support rails 224 extending from the front edge 106 to the rear edge 110 through the cutout portion 204. In addition to the main oven rack 202, the rack 200 includes a revolving apparatus 230 having a circular perimeter frame 232.

Revolving apparatus wires 234 extend across segments of the circular perimeter frame 232. An H-shaped pivot bracket 236 is formed with U-shaped brackets 238. Legs 240 make up the U-shaped brackets 238, and are connected to four of the revolving apparatus wires 234. A pivot pin 242 is also provided, similar to pivot pin 142 of the rack 100 in accordance with the invention.

5 A base H-shaped bracket 244 is connected to the two intermediate wire rails 222. The H-shaped pivot bracket 236 is rotatable relative to the base H-shaped bracket 244 through pivot pin 242 and other apparatus, such as bushings, sleeves, bearings or the like. As illustrated primarily in FIG. 8, the continuous frame wire 214, unlike the rack 100, provides for a stand for the rack 200. Also, it is apparent that the rack 200 is narrower in size with respect to the main oven rack, relative to the rack 100 with its main oven rack. The rack 200 in accordance with the invention could also be used as warmer rack or as a stand when the rack 200 is away from the cooking facilities, whether such facilities be an oven, grill or the like. Still further, and unlike the rack 100, the rack 200 includes a motor 250 which can be connected in any conventional manner through wires 252 to the pivot pin 242 and the H-shaped pivot bracket 236. The motor 250 can be used to actuate movement of the pivot pin 242 and pivot bracket 236 in a manner so that the revolving apparatus 230 rotates relative to the main oven rack 202. In this manner, rather than the rack 200 being manually rotated, the rack can be automatically rotated. Although FIG. 8 illustrates a motor 250, various other types of means could be utilized for automated rotation of the revolving apparatus 230. Also, the use of automated apparatus for revolution of a rotatable rack could be utilized with the rack 100 and other racks in accordance with the invention.

FIGS. 9 and 10 illustrate somewhat of a third embodiment of racks with revolving apparatus in accordance with the invention, but utilize the structure and concepts illustrated with respect to the rack with revolving apparatus 100. More specifically, FIGS. 9 and 10 illustrate a

rack with revolving apparatus 300. The rack 300 includes a first revolving apparatus 303 and a second revolving apparatus 304. The revolving apparatus 302 and 304 are associated with a main oven rack 306. The main oven rack 306 has a structure similar to the structure of the main oven rack 102 previously described with respect to FIGS. 1 – 5. FIGS. 9 and 10 illustrate the use of a pair of revolving apparatus associated with a single oven rack. Still further, the oven rack 306 could be a grill rack or rack used with other types of cooking apparatus. Also, FIGS. 9 and 10 illustrate the first revolving apparatus 302 being in one particular rotatable position relative to the oven rack 306, while the second revolving apparatus 304 is in a different revolution state relative to the oven rack 306. Because the first and second revolving apparatus 302 and 304 are structured as the revolving apparatus 130 associated with FIGS. 1 – 5, they will not be described in any greater detail herein.

In accordance with the foregoing, racks with revolving apparatus have been described in accordance with the invention. These racks facilitate handling, viewing and more even cooking of food products. The revolving apparatus associated with the invention can be turned by user or can otherwise be automatically revolved, using a motor or other electrical, mechanical or electro/mechanical means. With the racks in accordance with the invention, the need for actual handling of food products is eliminated.

The racks in accordance with the invention can be made of various materials, including metallic materials. Such racks may have finishes, such as chrome and porcelain. As earlier stated, the racks are not limited to conventional ovens, but may also be utilized with cooking burners, commercial ovens, grills or the like.

It will be apparent to those skilled in the pertinent arts that other embodiments of racks in accordance with the invention can be designed. That is, the principles of a rack with

revolving apparatus are not limited to the specific embodiments described herein. Accordingly, it will be apparent to those skilled in the art that modifications and other variations of the above-described illustrative embodiments of the invention may be effected without departing from the spirit and scope of the novel concepts of the invention.